3 ANALYSIS OF LEGISLATIVE ELEMENTS AND CONCLUSIONS

3.1 INVENTORY AND MAPPING OF EXISTING ENVIRONMENTAL DATA ON THE NATURAL RESOURCES OF LONG ISLAND SOUND (PA NO. 02-95 SECTION 3(A))

PA No. 02-95 Section 3(A) identifies specific data to be considered in meeting the statutory objectives:

A comprehensive inventory and mapping of all existing environmental data on the natural resources of Long Island Sound including, but not limited to:

a) coastal resources defined by Section 22a-93 of the Connecticut General Statutes, including;
   - coastal bluffs and escarpments;
   - rocky shorefronts;
   - beaches and dunes;
   - migratory stopover areas;
   - intertidal flats;
   - tidal wetlands;
   - freshwater wetlands and watercourses;
   - estuarine embayments;
   - coastal hazard areas;
   - developed shorefront;
   - islands;
   - nearshore waters;
   - offshore waters;
   - shorelands;
   - significant wildlife habitat; and
   - shellfish concentration areas;

b) unusual and important submerged aquatic vegetation;

c) historically productive fishing grounds and fish habitat;

d) location, breeding and nesting areas for rare and endangered species; and

e) points of public access and use.

An inventory of the available natural resource information required under PA No. 02-95 is summarized in Table 17. This table identifies natural resource information that is available in a digital format for mapping at a 1:125,000 scale in coastal, nearshore, and offshore environments. Table 17 also identifies information that is not available in a mapped format for these environments. Table 1 in Appendix D draws a distinction between data required by PA No. 02-95 , and data that may serve purposes of planning and permitting (i.e., regulatory approval). Table D-1 in Appendix D also includes a separate listing of other available geographic, environmental, and infrastructure data that

are not specifically identified in PA No. 02-95, but are useful in meeting the objectives of PA No. 02-95. In compiling this information, the Task Force consulted with the Institute of Water Resources at the University of Connecticut and the University of Connecticut Cooperative Extension Service. Much of the data presented here was developed by state and federal agencies, and is useful in generally identifying the resources of Long Island Sound. However, substantially more detailed and timely information may be required for comprehensive resource planning, and for review to make project specific assessments and site-specific determinations of resource delineation, environmental impact, and engineering constructability.

For the purposes of this data inventory, the geographic coverage of the study area includes the coastlands, estuaries, nearshore coastal waters and offshore waters of Connecticut. Data are also available from adjoining states including New York and Rhode Island, and such data may supplement or complement other data available, adding to an understanding of Long Island Sound as a regional resource. [286] Geographic coverage across state borders may, however, be incomplete or not entirely comparable in terms of scale, accuracy or other features.

Much of the data gathered to facilitate the work of the Task Force has been developed as part of GIS. The availability of GIS greatly facilitates the analysis, exchange, and use of information. Substantial valuable Long Island Sound resource data have not been digitized and thus are not available in a GIS format. Such data are nonetheless important and should not be ignored.

3.1.1 Data Needs and Gaps

Data are normally acquired for a variety of specific purposes including regional compilations for use in planning and policy formulation, and more detailed studies to support permitting. Issues of scale, accuracy and data quality, among other factors determine the appropriate application of data for purposes not related to their intended use. The Task Force has kept this in mind in applying some qualitative determinations as to the suitability of existing data for policy formulation.

Planning - Planning and policy formulation exercises may include the establishment of protected areas, corridors, or exclusion zones. Much of the mapping listed in Table 1 may be used, but are not necessarily sufficient for comprehensive planning purposes.

[286] Information on New York GIS resources is available through the Office of the New York Chief Information Officer, State Capitol, ESP, P.O. Box 2062, Albany, NY 12220-0062, Phone: 518/474-3421, Fax: 518/402-2976. James T. Dillon (cio@cio.state.ny.us). The GIS Clearinghouse web site can be found at http://www.nysgis.state.ny.us/index.html Questions on GIS data may be obtained by contacting administrators at nysgis@cscic.state.ny.us.
Information on Rhode Island GIS resources is available through the Rhode Island Statewide Planning Program, One Capital Hill, Providence, RI 02908. Contact: John Stachelhaus (rigis@admin.ri.gov), The GIS Clearinghouse web site can be found at http://www.edc.uri.edu/rigis/

Permitting - Permitting generally requires site-specific information. Project specific considerations that data may be called upon to address include:

- Consistency with federal, state, and local coastal zone policies and regulatory objectives;
- Identification of potentially affected resources;
- Effects on environmentally sensitive resources or protected areas;
- Timing of construction/construction methods;
- Conflict with other infrastructure;
- Mitigation (restoration/compensation); and
- Monitoring (permit compliance).

At the planning level, a number of data gaps have been identified by the Task Force with respect to the natural resources of Long Island Sound. Data gaps are summarized in Table 17 and identified in Table D-2 in Appendix D, along with suggested approaches to resolving data gaps including time frames and suggested responsibility. This includes data specifically identified under PA No. 02-95, as well as other useful data.

Table 17 – Natural Resource Mapping Pertinent to Energy Related Siting Policy in Long Island Sound[287]

Shore Region	Adequately Mapped Features	Inadequately Mapped Features
COASTAL (Above mean high water)	▪ The Trace of the Shoreline (Line of mean high water shown on U.S.G.S. Topographic Maps) ▪ Coastal Hazard Areas ▪ Coastal Topography ▪ Coastal Geology (Bedrock and Surficial) ▪ Coastal Bluffs and Escarpments ▪ Rocky Shoreline ▪ Beaches and Dunes ▪ Soils ▪ Tidal wetlands ▪ Freshwater Wetlands and Watercourses ▪ Coastal Water and Estuarine Embayments ▪ Islands ▪ Terrestrial Rare and Endangered Species ▪ Land Cover ▪ Points of Public Access ▪ Existing Transmission Infrastructure ▪ DEP Land *only* (Other State land not mapped) ▪ Water Quality Classifications	▪ Open Space ▪ Water Dependent Uses ▪ Developed Shoreline (Not digital unless hidden in ESI mapping) ▪ Significant Wildlife Habitats (turtles, mammals, haul-out locations) and Stopover Areas ▪ Anadromous and Catadromous Fish Runs ▪ State Land (Other than DEP Property) ▪ Areas of Special Ecological Value (e.g. Lower Connecticut River, Barn Island)

[287] List pertains to CECA-level planning decisions and Sound-wide mapping at about 1:125,000-scale.

Table 17 – Natural Resource Mapping Pertinent to Energy Related Siting Policy in Long Island Sound (Cont.)

	Adequately Mapped Features	Inadequately Mapped Features
NEARSHORE (Mean high-water line to 30-foot water depth)	▪ Shallow-Water Bathymetry ▪ Shellfish Concentration Areas (Commercial State and Some Commercial Municipal Only) ▪ Waterfowl Concentration Areas (Reconnaissance level mapping only)	▪ Intertidal Flats ▪ Rocky Reefs ▪ Significant Wildlife Habitats (turtles, mammals, haul-out locations) ▪ Shellfish Concentration Areas (Commercial Municipal, Natural) ▪ Areas Potentially Suitable for Aquaculture ▪ Eelgrass Beds (No data on temporal variability, trends) ▪ Potential Eelgrass Habitat ▪ Submerged Aquatic Vegetation Other than Eelgrass (Kelp, grasses) ▪ Historically Productive Fishing Grounds ▪ Essential Fish Habitats ▪ Locations of Rare and Endangered Species ▪ Surficial Sediments ▪ Sedimentary Environments ▪ Sediment Quality ▪ Essential Benthic Habitats (Vertebrate and Invertebrate)

Table 17 – Natural Resource Mapping Pertinent to Energy Related Siting Policy in Long Island Sound (Cont.)

Shore Region	Adequately Mapped Features	Inadequately Mapped Features
OFFSHORE (Waters greater than 30 feet in depth)	▪ Deep-Water Bathymetry ▪ Dredged Material Disposal Sites ▪ Surficial Sediments ▪ Sedimentary Environments ▪ Sediment Quality	▪ Significant Wildlife Habitats (turtles, mammals, haul-out locations) ▪ Historically Productive Fishing Grounds ▪ Areas Potentially Suitable for Aquaculture ▪ Locations of Rare and Endangered Species ▪ Essential Fish Habitats ▪ Essential Benthic Habitats (Vertebrate and Invertebrate) ▪ Waterfowl Concentration and Migratory Stopover Areas ▪ Invertebrates That Encrust including Bryozoans and Corals ▪ Submerged Aquatic Vegetation (Kelp)

3.2 Evaluation of the Relative Importance and Uniqueness of the Natural Resources and Identification of the Most Ecologically Sensitive Natural Resources Of Long Island Sound (PA 02-95 Section 3(B))

The Task Force was charged with identifying the most ecologically sensitive natural resources of Long Island Sound. However, in reviewing the adequacy of natural resource data for Long Island Sound, the Task Force acknowledged that many regulatory agencies, including the DEP, NOAA, NMFS and USFWS have this information.[288] These agencies also review, compile, and update the data as conditions change.

The Task Force also tried to evaluate the relative importance and uniqueness of the natural resources of Long Island Sound. While resource rankings may be desirable for general planning purposes, they are most appropriately based on a detailed, scientific data set that provides a comprehensive profile of an ecosystem. As the Task Force has seen through its efforts to meet its charge to inventory and map Long Island Sound's resources, the existing Long Island Sound resource data sets, although extensive, do not represent a complete, comprehensive and current picture of Long Island Sound's ecosystem.

Further, any list identifying the relative importance and uniqueness of natural resources would be subjective, time sensitive, and based on potentially different user criteria. Such criteria may differ among recreational, commercial, and/or ecological interests. Indeed, the greatest value associated with the resources of Long Island Sound is not the relative importance or uniqueness, but the integration of these resources to function as a single ecosystem.

As a general guide, the Task Force concludes that resources discussed in Section 2.1 of the Summary of Background Information of this study and as identified by existing resource protection programs provide information related to the interrelationships, unique characteristics, and ecological sensitivity of natural resources of Long Island Sound. However, the Task Force cautions that this information is not and cannot be used as a substitute for site-specific reconnaissance for project-specific permitting, where the specific environment, users, timing and project can be used to evaluate the relative importance, uniqueness and sensitivity of natural resources.

[1] See NOAA Environmental Sensitivity Index, DEP list of Endangered, Threatened and Special Concern Species in Connecticut, the National Wetlands Inventory, the U.S. Fish and Wildlife list of Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, and National Marine Fisheries Service Essential Fish Habitat.

3.3 Assessment of the Present Status, Future Potential and Environmental Impacts on Long Island Sound of Meeting the Region's Energy Needs that Do Not Require the Laying of a Power Line or Cable within Long Island Sound (PA No. 02-95 Section 3(c)) and an Evaluation of the Methods to Minimize the numbers and Impacts of Power Line Crossings, Gas Pipeline Crossings, and Telecommunications Crossings within Long Island Sound, Including an Evaluation of the Individual and Cumulative Environmental Impacts of any such Proposed Crossings (PA No. 02-95 Section 3(d))

Pursuant to PA No. 02-95 Sections 3(C) and 3(D), the Task Force is required to examine alternatives for avoiding or minimizing construction of energy and telecommunications infrastructure across Long Island Sound. Section 3(C) focuses on alternatives to constructing power lines or cables across Long Island Sound; Section 3(D) focuses on methods to minimize numbers and impacts of crossings. For convenience and completeness, this section combines Sections 3(C) and 3(D) and offers an evaluation of the status, potential, and environmental impact of each of the alternatives identified in Section 2.8. Alternatives to constructing energy and telecommunications infrastructure projects across Long Island Sound can be grouped under several categories:

Alternative routes for gas pipelines that do not cross Long Island Sound;

Alternative routes for electric cables that do not cross Long Island Sound;

Measures to expand, reinforce, or upgrade existing generation and transmission assets in Connecticut and Long Island that do not require cables crossing Long Island Sound;

Alternative fuels and energy sources that do not require Long Island Sound crossings;

Measures that reduce the demand for gas and electricity through conservation, load management, and demand response programs; and

Alternative telecommunications technologies that do not require laying of a cable across Long Island Sound.

Utilities, merchant generator and transmission companies, regulators, planners, and other stakeholders have, at one time or another over the last few years contemplated all of the alternatives inventoried in Table 18. Some alternatives, such as conservation and load management, are programs in both Connecticut and New York that have been in place for many years. Others, such as some of the interstate and international cable and pipeline projects, were proposed several years ago but have since been cancelled or are dormant. Some projects, such as new electric generation, repowering of old oil-fired plants and alternative energy programs on Long Island, are still being vigorously pursued.

However, it is important to note that not all of these proposed projects and programs will eventually come to fruition, nor may all of the alternatives identified herein be prudent and feasible to adequately provide energy reliability for the region. In addition, the alternatives identified in Table 18 will change over time, as other alternatives will be

developed in response to market conditions and/or technological advances in the energy and telecommunications industries. The Task Force considered use of corridors to minimize the number and impact of crossings on Long Island Sound. However, the Task Force concluded that the use of corridors would not decrease the number of crossings and would not necessarily reduce the impact on Long Island Sound. Also, the clustering of energy and telecommunications infrastructure in corridors may be inconsistent with national security concerns (See Recommendations Section. 4.1.3).

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Alternative Routes for Gas Pipelines that do not Cross Long Island Sound			
Nova Scotia to South Shore	Slowing of natural gas exploration and development in Atlantic Canada has given rise to gas supply uncertainties.	Blue Atlantic project on hold indefinitely. No market support at this time.	Pipeline route may traverse sensitive marine environments on Scotian Shelf, productive fishing grounds in Gulf of Maine, nearshore environment on south shore of Long Island Sound. To the extent additional gas supplies to Long Island displace fuel oil; the result would be a net decrease in air emissions and reduce risk of oil spills.
New Jersey to South Shore	Proposed Cross Bay project from New Jersey to Long Beach, Long Island, would have increased gas delivery capacity on existing Transco pipeline by 0.122 Bcf/d (125,000 Dth/d) to western Long Island. However, gas deliveries to southwest Long Island might not mitigate congestion on KEDLI Facility System nor improve deliverability to Suffolk County, an area of high load growth. (Refer to Gas Pipeline Reinforcements)	Cross Bay project proposed to expand capacity by increased compression and other engineering enhancements. Cross Bay project was cancelled; no market support at this time.	Potential construction impacts to marine and terrestrial environment. Minimal impact to air quality from added compressors. To the extent additional gas supplies to Long Island displace fuel oil; the result would be a net decrease in air emissions and reduce risk of oil spills.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Alternative routes for electric cables that do not cross Long Island Sound			
Land Route via New York City and under East River	An overland route from Connecticut to Long Island that incorporates the existing 115 kV system in SWCT and the existing Y-49 and Y-50 NYPA cables would not enhance energy reliability, because those lines are already constrained or fully subscribed. This route would need to be reinforced with new circuits to provide reliability benefits.	There is no market or regulatory support for an overland line at this time. Cost of ROW acquisition or easements would be very high and possibly prohibitive.	Overland electric lines may encounter aesthetic concerns. Environmental justice concerns. Difficulties expected in acquiring ROW in highly developed areas. Impacts to terrestrial ecology.
South Shore Route (Phase I)	The proposed NeptuneRTS Phase I project would connect capacity-rich New Jersey with Long Island, adding a 600 MW HVDC line. This project also includes a 600 MW connection from New Jersey to New York City. Expected commercial operation is 2004/2005. (Neptune RTS Phase I includes cables to New York City and to Long Island.	The NeptuneRTS Phase I merchant project is seeking to expedite issuance of the remaining permits.	Proposed NeptuneRTS Phase I cable would have a 47-mile marine segment and impact near-shore areas of New Jersey and the south Shore of Long Island.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Upstate New York Overland Route (Millennium Pipeline)	The proposed Millenium Pipeline would cross Lake Erie and extend to Westchester County, NY. If constructed, the pipeline would add 0.682 Bcf/d (700,000 Dth/d) capacity into the New York Facilities System. The pipeline would not deliver gas directly to Long Island, and shippers on Long Island would still need to rely on the KEDLI system for local delivery to and across the Island. Extension of Millenium or any other pipeline through NYC to serve Long Island has not been proposed.	Hudson River crossing has posed state regulatory issues. ROW acquisition and pipeline construction through densely populated areas of Westchester County are problematic. Does not obviate need to ship gas through congested KEDNY and KEDLI Facility System to Long Island market. No market support at this time.	Pipeline would cross Lake Erie and extend approximately 400 miles through New York, resulting in potential impacts to a variety of natural and cultural resources. To the extent additional gas supplies to the New York metropolitan region would displace fuel oil; the result would be net decrease in air emissions.
Eastchester Pipeline Project	Iroquois' Eastchester Pipeline traverses Long Island Sound between Northport, Long Island and NYC. The 35-mile marine pipeline delivers gas from Northport to the Consolidated Edison system at Hunts Point in the Bronx. Two new compressor stations and three compressor station upgrades also are part of the project.	The project is under construction and is scheduled for completion in 2003. The project is designed to provide natural gas for electric generation and to serve residential, industrial, and commercial customers in NYC.	Encountered contaminated sediments in the East River. Extensive coordination with NYSDEC, the FERC, and the ACOE to define and minimize overall environmental impacts to benthic communities, fisheries, endangered species, turbidity. Air quality impacts associated with the two new compressor stations and additions to the three existing compressor stations.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Measures to expand, reinforce, or upgrade existing generation and transmission assets in Connecticut and Long Island that do not require cables crossing Long Island Sound			
Add and/or Repower Generation in SWCT	Any new generation would require an ISO-NE system impact study for interconnection. Additional generation resources would not solve the SWCT load pocket transmission problems, but could help to reduce congestion costs for Connecticut. Voltage, stability, and short circuit problems on the existing 115 kV transmission system in SWCT would still need to be addressed.	Milford Power Project, when operational, would add 536 MW to SWCT. Construction is nearly complete, but due to contractual and legal issues, commercial operation could be delayed to late 2003 or even beyond. CL&P is contracting for temporary additional generation in 2003 to meet summer peak demand in the Norwalk-Stamford subarea, as ISO-New England did in 2002. English Station, when operational, would provide 70 MW of oil-fired peaking capacity. (Limited operation)	Some types of new generation in urban areas of SWCT raise environmental justice concerns. To the extent that gas-fired generation displaces older, less-efficient units, NOx and SO2 emissions may likely decrease on a per MW basis. However, as long as the growing demand for electricity continues to be largely met by fossil fuel fired generation, emissions will also continue to increase.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Add generation on Long Island	Proposed new combined cycle generation projects on Long Island total 830 MW, and proposed simple cycle peaking units total 489 MW.	Additional gas transportation capacity to Long Island and on Long Island may be necessary to fuel new gas turbines. Not all of the proposed projects may ultimately be constructed. For example, the Kings Park project is on hold and seeking a buyer. Other projects have been cancelled.	Additional gas-fired generation may require construction of new gas pipelines; the impact of such pipeline(s) construction must be considered. To the extent that gas-fired generation displaces older, less-efficient units, NOx and SO2 emissions may likely decrease on a per MW basis. However, as long as the growing demand for electricity continues to be largely met by fossil fuel fired generation, emissions will also continue to increase.
Repower generation on Long Island	KeySpan is examining the feasibility of repowering units at Wading River and EF Barrett, adding up to 395 MW of additional generation capacity. Conversion to gas would require additional gas deliveries to these facilities, and increase Long Island's demand for gas.	Need for additional gas deliverability to repowered units requires additional analysis.	Additional gas-fired generation may require construction of new gas pipelines; impact of such pipelines must be considered. To the extent that gas-fired generation displaces older, less-efficient units, NOx and SO2 emissions may likely decrease on a per MW basis. However, as long as the growing demand for electricity continues to be largely met by fossil fuel fired generation, emissions will also continue to increase.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Expand DG on Long Island	NYSERDA provides funding and technical expertise for distributed generation initiatives. Limited industry on Long Island reduces the potential for economically feasible cogeneration or self-generation. Clean DG may be contingent upon additional natural gas capacity for fuel supply.	LIPA's Energy Plan focuses on DG using alternative fuels and energy sources rather than traditional gas-fired cogeneration or self-generation.	An industrial or commercial facility with DG will still rely on the utility for power when the DG system is unavailable, so the need for expanded transmission capacity may not be reduced.
Transmission Line Improvements	Upgrades and expansions of the transmission systems can enhance system reliability, provide greater access to competitive sources of energy, increase the internal interface transfer capabilities and accommodate competition from new merchant generation. While Connecticut and New York have both proposed transmission line improvements, use of interconnections between CT and NY (ISO-NE and NY ISO) as a possible loop for power to flow may achieve better reliability.	ISO-NE has identified a 345 kV transmission expansion project that will address SWCT reliability concerns. CL&P has proposed Phase I, which will expand transmission capacity between Bethel and Norwalk, and Phase II would complete a 345 kV loop from Norwalk to Middletown. At TEAC 13, ISO-NE recommended that a 345 kV loop include a 345 kV extension from Norwalk to the Glenbrook substation in Stamford and a 115 kV line between Norwalk Harbor and Glenbrook. LIPA's transmission plan incorporates additional capacity on a number of 69 kV and 138 kV transmission lines on Long Island.	Visual and aesthetic impacts from overhead lines may be a concern. EMF impacts can be mitigated through implementation of best management practices. Impacts to air quality depend on how additional transmission affects the dispatch of electric generation. Impacts to terrestrial ecology.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Gas Pipeline Reinforcements	The capacity of existing pipelines can be expanded by adding compression to boost gas pressures and deliverability, but only up to the design limits of the pipeline. This does not require addition of new pipeline segments, but does involve addition of compressor station(s). In addition, pipeline capacity can be addressed by looping which involves constructing a new parallel pipeline along certain sections of an existing pipeline system.	Pipeline capacity expansion projects are currently being pursued by Iroquois and Algonquin to enhance deliverability to Connecticut and Long Island.	Additional compressors may minimally increase air emissions. To the extent additional gas supplies to Long Island displace use of fuel oil, result would be net decrease in air emissions and a reduced risk of oil spills. Looping will require additional right-of-way, and may impact terrestrial ecology, water resources, and/or cultural resources.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Alternative fuels and energy sources that do not require Long Island Sound crossings			
Fuel Oil	Connecticut currently relies on fuel oil as the primary fuel for 35% of its electric capacity. 52.4% of Connecticut households use fuel oil or kerosene for home heating.[289] Long Island substantially relies on oil for electric generation when it is economically attractive, and/or when gas pipeline capacity is fully utilized meeting other demands, particularly in winter months. All of Long Island's central station power plants except for Glenwood are either oil-fired or can co-fire oil and gas, depending on fuel price, gas availability, and emissions limits. Almost 70% of all homes and half of all business use oil heat.[290]	On Long Island, existing limited capacity of oil storage tankage limits the extent to which oil use could be expanded.	Threat of oil releases from tankers and storage tanks remains an environmental concern. Existing fleet of oil-fired generation is less efficient and has higher emissions than new gas-fired combined cycle plants. Continued use of oil for residential and commercial heating will also not reduce emissions from these units.

[289] The New England Gas Association, July 2002, based on U.S. Census data year 2000.
[290] Oil Heat Institute of Long Island www.ohili.org/index.shtml.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
LNG	LNG is natural gas that has been cooled to minus 260 degrees F for shipment and/or storage as a liquid. The advantages of LNG allow long-distance transport of LNG by ship across oceans and local distribution by trucks onshore. The storage advantages allow for use of LNG to meet peak demand needs, however, LNG is generally not economic as a year-round substitute for natural gas. No new import facilities have been proposed or announced in the Northeast. Deliveries were interrupted following 9/11 due to homeland security concerns.	LNG facilities, including the shipping terminal in Everett, MA and remote storage facilities throughout New England and New York are important in meeting peak winter demand needs of local gas utilities. The 1,550 MW New Mystic Station under construction in Everett, MA, has signed a full requirements supply arrangement with the LNG terminal operator, Distrigas. LNG Mystic Station is uniquely situated to receive vaporized deliveries directly from Distrigas. A 2 Bcf LNG storage/production facility is proposed in Waterbury, CT by Yankee Gas Service Company. The project is before the CT DPUC, with a decision expected in July. Regulatory approvals are being obtained; local land use approvals have been issued. Ground breaking is projected in 2004 with a likely in-service date of 2007.	Air quality benefits are the same as natural gas. Despite an excellent safety record, safety and security of tanker deliveries and transportation of LNG remain a concern.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Resource Recovery	Expansion of resource recovery plants is limited. In addition it is difficult to site new resource recovery plants.	Long Island has 116 MW of on-Island capacity produced from resource recovery plants. Connecticut has 159 MW of capacity produced from resource recovery plants.[291]	Hazardous air pollutants from the combustion of municipal waste are a concern. State and federal standards govern emissions. Beneficial utilization of municipal waste reduces need for landfill capacity.
Wind	Wind power has the potential to provide significant energy resources under the right wind and economic conditions, although projects are speculative at this time.	LIPA is seeking bidders to construct a 100-140 MW offshore wind turbine farm, for operation as early as 2007. In response to this RFP, Winergy LLC is evaluating five wind farm sites in New York waters off the south shore of Long Island, ranging from 12 to 295 MW. Connecticut does not have, nor are there proposals to develop utility-scale wind energy facilities in the state.	Renewable energy source with no emissions of pollutants or greenhouse gases. In the Northeast, most of proposed projects are offshore wind farms, requiring construction of towers and connecting cables in the marine environment and may have aesthetic and marine impacts. Impacts on bird migration and other environmental effects are under study. Impacts on competing uses of marine resources must also be considered.

[291] Connecticut Siting Council 2002 Ten-Year Forecasts of Loads and Resources.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Photovoltaics	High capital cost of photovoltaics is presently the limiting factor for solar power technology. Systems require considerable surface area and amenable climate conditions.	Under LIPA's Solar Pioneer program 252 photovoltaic roof systems have been installed through 2002. To date more than 900 kW of installed PV capacity has been installed. The U.S. Department of Energy has a Million Solar Roofs (MSRI) initiative to install solar energy systems on one million U.S. buildings by 2010.	Renewable energy source with no emissions of pollutants or greenhouse gases.
Fuel Cells	Most fuel cells are used in cogeneration applications in industrial and institutional facilities to maximize efficiency. Fuel cells for residential applications are currently still in demonstration phase.	LIPA installed a $7M, first-of-kind fuel cell program in West Babylon, sufficient to power 100 homes. LIPA has deployed 17 5-kW systems at commercial and academic locations across the Island, and intends to deploy fuel cells at residential locations through 2003. LIPA is currently evaluating proposals for a 10-MW fuel cell substation deployment program. Fuel cell manufacturers located in Connecticut include: Fuel Cell Energy Inc., UTC Fuel Cells, Acumentrics Corporation, and Proton Energy Systems, Inc. The installed capacity of fuels cells in Connecticut is approximately 2 MW.[292]	Fuel cells running on hydrogen derived from a renewable source will emit nothing but water vapor. The waste heat from a fuel cell can be used to provide hot water or space heating for high efficiency, potentially displacing fossil fuel consumption. High efficiency use of natural gas.

[292] Review of Connecticut Siting Council information including Docket 171, Petitions 376, 482, 553, and 598.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Energy Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Measures that reduce the demand for gas and electricity through conservation, load management, and demand response programs			
C&LM: Connecticut	Conservation and load management programs, including demand response programs, offered by utilities and ISO-NE have the potential to reduce or defer the need for additional generation to meet peak load.	CL&P and UI's conservation and load management programs reduced load in 2002 by 116 MW state-wide[293]. Reallocation of the Conservation and Load Management Fund would adversely affect C&LM programs. As of March 31, 2003, there were 88 assets signed up for ISO-NE's current load response program in Connecticut providing 133.1 MW of potential load relief.[294]	ISO-NE calculates that each MWh of generation conserved reduces New England's emissions of NOx by 1.7 lbs, of SO_2 by 4.9 lbs and of carbon dioxide by 1,394 lbs on an annual average.[295] State-specific data are not available.
C&LM: New York	LIPA's conservation and demand-side programs are designed to produce energy and load impacts that reduce or defer the need for new generating resources. Compared with other parts of New York, Long Island has a relatively smaller proportion of commercial and industrial load, limiting the potential for demand-side programs.	LIPA's Clean Energy Initiative has resulted in 138 MW of peak energy savings to date.	LIPA estimates the following reductions to date attributable to the Clean Energy Initiative: NOx: 395 tons SO_2: 993 tons Carbon Dioxide: 270,377 tons

[293] DPUC Docket 02-04-12.
[294] http://www.iso-ne.com/Load_Response/main.html.
[295] ISO New England *2001 NEPOOL Marginal Emission Rate Analysis*, December 2002. http://www.iso-ne.com/Planning_Reports/Emissions/Marginal%20Emissions%20Analysis%202001.doc.

Table 18 – Infrastructure Alternatives, Potential, Status, and Environmental Impact (Cont.)

Alternative	Reliability Potential	Status and Engineering / Market Considerations	Environmental Impact
Alternatives to telecommunications cables across Long Island Sound			
Wireless communications	Wireless communications reduce the need for infrastructure crossings of Long Island Sound	Wireless carriers provide mobile or cell phone, wireless internet, and paging. Demand for communications services has quadrupled in the last ten years.	Visual impacts of cell phone towers may be a concern. Impact to bird migrations is under study.
Overland Routes	Existing optical fiber system has full redundancy. No new cross-Sound telecommunications lines are currently proposed.[296]	The only telecommunications infrastructure addition expected in next few years will be cell phone towers and distribution level infrastructure for DSL and cable.	Overhead cables may have aesthetic and visual impacts. Many municipalities have introduced ordinances that require utilities to bury all new facility installations.

[296] Use of satellites has generally replaced the need for additional fiber optic cables crossing Long Island Sound.

3.4 Inventory of Current Crossings of Long Island Sound and an Evaluation of the Current Environmental Status of those Areas that have Crossings (PA 02-95 Section 3(E))

Five energy and telecommunications facilities presently link Connecticut and Long Island via crossings of Long Island Sound. These include:

Two electric transmission cable systems:

The 1385 Line cable system (AC), which is jointly owned by CL&P and LIPA and consists of seven cables that link Norwalk, Connecticut and Northport, Long Island; and

Cross-Sound Cable's system (DC), consisting of a bundle of two solid dielectric cables and a fiber optic telecommunications cable, which traverses between New Haven and Brookhaven, Long Island (1,800 feet of cable has not been installed to depths required by permits).

One natural gas pipeline (the Iroquois pipeline), which extends across Long Island Sound from Milford, Connecticut to Northport, Long Island.

Two telecommunications cables:

AT&T's fiber optic cable, which traverses from East Haven to Shoreham, Long Island; and

MCI's fiber optic cable, which extends from Madison to Rocky Point, Long Island.

In addition to these interstate energy and telecommunications facilities, a variety of other submarine facilities traverse portions of Long Island Sound, typically to provide mainland utility services to certain of the state's inhabited islands (e.g., the Thimble Islands), as well as to islands that have lighthouses and Fishers Island, New York. These facilities provide electricity, telecommunications service, and potable water to the islands, as well as power to lighthouses used in navigation.

Further, four other major submarine energy and/or telecommunication facilities traverse Long Island Sound, but are located entirely in New York. These facilities, which are in the central and western portions of Long Island Sound, consist of:

Two 345 kV electric transmission lines between Westchester County and Long Island; the Y-49 line, owned by the New York Power Authority, and the Y-50 line, owned by LIPA and Con Edison;

Iroquois' recently constructed Eastchester natural gas pipeline, which extends 35 miles from Northport, Long Island to the Bronx; and

The Flag's fiber optic cable, which was installed within the last five years and which extends from Northport, Long Island, eastward through Long Island Sound to Europe.

This inventory focuses on the five energy and telecommunications facilities that cross Long Island Sound between Connecticut and Long Island. These facilities are separated both spatially (none of the five facilities are located in close proximity) and temporally (none of the five facilities were constructed within the same time frame).

Information for this section was drawn in part from project status reports that the Task Force requested from the owners of the crossings.[297,298,299,300,301] Other data were compiled from presentations made by project proponents and regulators to the Task Force. In addition, reports, permits, and regulatory decision-making documents relevant to the five crossings were reviewed.

3.4.1 The 1385 Line

The 1385 Line cable system traverses approximately 11 miles from the Norwalk Harbor Substation on Manresa Island in Norwalk, across both the seabed of Sheffield Harbor and Sheffield Island, to the Northport Substation in Northport, Long Island. The 138 kV cable system, which is owned by CL&P in Connecticut and LIPA in New York, was installed in 1969 and commenced operation in 1970. The system consists of seven separate three-inch-diameter fluid-filled cables, each containing a single hollow core copper conductor surrounded by paper insulation, a lead covering, and outside armoring. To serve as an effective insulator, the paper is impregnated with dielectric fluid maintained under pressure.

Construction of the 1385 Line cable system pre-dated the promulgation of requirements for comprehensive baseline environmental studies and post-construction environmental monitoring. As a result, there is no pre- and post-installation environmental data that can be used to compare the present condition of the cable area to that immediately after the completion of the project over 35 years ago.

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[297] Iroquois Gas Transmission System L.P., Existing Pipeline "Project Status Update", received February 28, 2003.

[298] Cross-Sound Cable Company, LLC, Letter to Joel Rinebold from Jeffrey A. Donahue dated February 5, 2003.

[299] Islander East Pipeline Company. Letter to Joel Rinebold from Gene H. Muhlherr dated July 24, 2002.

[300] Northeast Utilities System Company (NUSCo). Letter to Joel Rinebold from Paula M. Taupier dated February 5, 2003.

[301] The Task Force requested information from AT&T and MCI, but did not get a response and was unable to acquire information other than that contained in the DEP permits, issued for these two projects.

Since the mid-1990s, environmental monitoring has been conducted primarily to evaluate the effects of dielectric fluid releases caused by anchors or other objects hitting and damaging the cables. The most recent such damage occurred in November 2002.

CL&P has reported these accidental releases to DEP and other regulatory agencies in accordance with applicable requirements, including the Consent Orders issued to CL&P and LIPA in 1995/1996 and 1998 by DEP and the NYSDEC. Impact assessments also were conducted in accordance with these Consent Orders.

Except as displaced by anchor drag or other accidents and associated repairs, the existing 1385 Line cables have remained approximately where they were first installed. Certain portions of the cables that were not originally buried have settled into the silt on the seabed or have been covered by drifting sediments.

The Whitlatch/OSI studies concluded that there were no discernible differences in sediment type or biological communities between habitats over the existing cables and those not over the cables[302]. Based on these studies, CL&P concluded that despite the relatively crude construction techniques (compared to those available today) used to install the 1385 Line, benthic productivity in the impact area recovered over time.

However, in one area -- the shallow portions of the sheltered cove north of Sheffield Island – researchers did find fewer numbers of species and individuals in depressions located over the buried cables. Researchers could not determine whether this reduction was related to differences in bottom topography or the dense accumulations of macroalgae found in these depressions.

Since the cables commenced operation in 1970, there have been approximately 55 instances resulting in the release of alkylbenzene-containing dielectric fluid into the marine environment. In response to Consent Orders issued in the mid-1990s, areas that were subject to dielectric fluid leaks were studied for impacts to shellfish and sediments Remediation of fluid releases was not required. According to the reports, alkylbenzene levels in sediment and shellfish near the cables were found to be consistent with background levels for Long Island Sound.

John Volk, then Director of the Department of Agriculture, Bureau of Aquaculture, noted in a presentation to the Task Force that some trenches are still evident after 30 years.[303] He also noted that while alkylbenzene is relatively inert, the state required closure of a shellfish bed following one of the incidents.

[302] Norwalk, Connecticut to Northport, New York Submarine Cable Replacement Project; Benthic Habitat Mapping & Shellfish Enumeration, Sediment Dispersion Modeling, and Simulations of Sediment Transport and Deposition Long Island Sound-Connecticut; CL&P May 2002.

[303] Presentation by Mr. John Volk, then Director of the Department of Agriculture, Bureau of Aquaculture, to the Long Island Task Force Meeting of September 19, 2002. John Volk retired from the Department of Agriculture in May 2003.

Cross-Sound Cable

In accordance with the state-approved benthic monitoring plan, Cross-Sound Cable completed the first post construction (six-month) monitoring in November 2002.[304] A similar pre-installation survey was completed in May 2002. Cross-Sound Cable reports that the results of the post-installation survey indicate the following:

> The only observable change in the seabed geomorphology from the pre--installation report is a shallow, localized, linear depression representing the path of cable installation. The depressions range from 0.5 to 3 feet deep, and 2 to 8 feet wide.
>
> The six benthic habitat types identified in the pre-installation survey are still detected in the post installation surveys. Based on video imagery and sediment profile images, the only visible changes in substrate characteristics is in the Federal Navigation Channel. In this area is a patchy, thin, 1 to 2 cm sediment layer comprised of fine sandy silt. This feature was not observed in any of the other survey areas.
>
> The types and diversity of bottom dwelling organisms and macroalgae observed in the video imagery remained consistent between the pre- and post-installation surveys. Prominent organisms observed in remote video images obtained over the cable centerline were comparable to those observed in video obtained along survey lines offset from the cable area. More disturbance of sediment layers by biological activity was evident in the post-installation survey conducted in October/November compared to the pre-construction April/May survey, presumably due to seasonal conditions. The biological activity confirms recruitment of organisms into the installation area.
>
> Sediment oxidation depths, a marker for the quality of the benthic habitat in estuaries like Long Island Sound, were consistent between pre- and post-installation surveys. This measurement combined with the other parameters measured through sediment profile imagery suggests that the installation of the cable did not adversely impact habitat quality for benthic communities.

Iroquois Gas Transmission System

The principal issues raised with regard to the Iroquois pipeline pertain to impacts to the benthic environment, including shellfish lease areas. No documented issues were identified with respect to depth of cover over the pipeline.

In addition to the use of the drag beam to smooth the nearshore areas affected by

[304] Six-Month Post Installation Benthic Monitoring Survey for the Cross-Sound Cable Project, New Haven CT, to Shoreham, NY. October 14 to November 20, 2002. Prepared by Ocean Surveys Inc. The survey protocol was approved by DEP with consultation with Department of Agriculture, Bureau of Aquaculture, NMFS, and the Army Corps of Engineers.

dredging activities, Iroquois implemented various measures to mitigate shellfish-related concerns. These ranged from pre-construction route modifications to compensation to the shellfish leaseholders.

Iroquois surveyed the pipeline route in 1993 and again in 1999.[305] Based on the results of these surveys, Iroquois concluded that natural sediment transport and infilling covered the offshore portion of the pipeline within a year or two of installation in those areas where the pipeline was installed by plowing in clay sediments. During that period, the sediment slopes across the trench in general were naturally reduced on the order of 5 to 20 degrees. In the nearshore area, the seabed was observed to be smooth, with little or no bottom relief.

Iroquois also conducted surveys along the pipeline route in the shellfish lease areas off Milford. These surveys were conducted in February/March 1991 (pre-construction) and July 1991 (post-construction), and involved comparisons of oysters per square yard at monitoring points ranging from 100 feet to 4,250 feet from the pipeline centerline. In general, the results of the surveys showed that compared to pre-construction conditions, the number of oysters decreased after construction at distances of 100 to 400 feet from the pipeline centerline, but increased after construction at distances greater than 1,270 feet from the centerline of the pipeline.

In addition Iroquois performed a water quality monitoring program using live oysters. Six monitoring stations were established near the pipeline in March 1991. The oysters were recovered in July 1991. At each of the six locations, the oysters appeared normal in color and no offensive odor was detected.[306]

The Bureau of Aquaculture was extensively involved in monitoring the impacts of the Iroquois project on shellfish resources.[307] Bureau of Aquaculture staff reported that anchors associated with the construction equipment disturbed bottom substrate as far as 2,000 feet on either side of the pipeline centerline, creating long-term impacts to oyster habitats. Bureau of Aquaculture staff also have noted that despite attempts to level the bottom, depressions left by the anchors have filled in with fine-grained sediments and presently have low or no productivity. In the short-term, oysters are particularly vulnerable to suffocation from sediments that are suspended and redeposited during construction. During construction, the width of the sediment plume appeared to extend out as much as 4,000 feet from the construction area. As it takes two to four years for oysters to grow to harvestable size, such effects can result in long-term disruption of the harvest.

Commercial shellfishermen provided the Task Force with personal, anecdotal evidence of

[305] Observations of Pipeline Corridor from 1999 High Resolution Multibeam Survey, Construction Details from 1991 Long Island Sound Pipeline.

[306] Summary of Data concerning Shellfish Resources in Milford Harbor Before and After Construction of the Iroquois Natural Gas Pipeline. Prepared by Andrew W. Rehm, Ph.D., September 1992.

[307] Presentation by Mr. John Volk, then Director, Bureau of Aquaculture, Connecticut Department of Agriculture to Long Island Task Force Meeting of September 19, 2002. John Volk retired from the Department of Agriculture in May 2003.

disruption of oyster aquaculture operations from construction of the Iroquois pipeline.[308] They attested that construction resulted in an impact area as much as 400 feet on either side of the pipeline. They suggested that the use of the drag beam to level the trench has proved only partially effective, and portions of the trench may be as much as 6 feet deep. The steep slopes along the trench have interfered with the use of oyster dredges. Oysters do not appear to have returned to areas within the trench, although the area was recolonized with hard-shell clams. The shellfishermen also noted that anchor scar drag marks, some 800 to 900 feet long, persist several hundred feet outside of the primary impact area. These anchor scars likewise affect harvesting.

The identification of definitive data concerning the impacts of the Iroquois construction on shellfish resources is further complicated by the lack of pre- and post-construction shellfish productivity data for the affected leases.[309] Shellfishermen have indicated to the Task Force that such productivity data is not recorded. In the 12 years subsequent to the installation of the Iroquois pipeline, three new shellfish leases have been created directly along the pipeline route (i.e., these leases were established over the pipeline route, in areas where no such leases existed previously). This indicates that at least some areas in the vicinity of the pipeline route remain economically viable for shellfish production.

AT&T

The DEP permit required that the cable be installed using HDD for 3,500 feet waterward of the high tide line, approximately 8 to 50 feet beneath the sediment surface, in order to avoid impacts to oyster beds. From the drilling exit point, the permit required that the cable be installed using the jet plow trenching process, to a depth approximately 10 feet below the sediment surface, except for an anchorage area where the burial depth was required to be 20 feet.[310]

Construction monitoring chiefly focused on potential releases of HDD drilling fluid, and appropriate containment measures for drilling fluids were required. The monitoring plan did not require AT&T to collect post-construction environmental data.

No further information on the environmental status of the AT&T cable was provided to the Task Force.

MCI

The DEP permit required MCI to install approximately 1,600 linear feet of the cable using HDD to a depth of 50 to 75 feet NGVD. Beyond the HDD exit hole, the permit

[308] Presentation by Mr. Larry Williams and Mr. David Hopp (independent shellfish farmers). LIS Task Force meeting of March 12, 2003.

[309] Presentation by Mr. David Warman, Vice President of Engineering – Iroquois, Long Island Sound Task Force meeting of September 12, 2002.

[310] Despite a request from the Task Force, AT&T and MCI did not provide additional information.

required the cable to be installed to a depth of three to six feet beneath the sediment surface using a jet cable plow method.

The permit also imposed time-of-year restrictions, barring in-water construction between June 1 and September 30, to protect spawning shellfish in the area. However, the cable did not directly cross any shellfish concentration areas or leases, according to Department of Agriculture, Bureau of Aquaculture maps that were included in the permit.

MCI was also required to notify Connecticut licensed lobster fishermen who fish in the area of the jet plowing of the need to temporarily remove gear during construction.

Monitoring for accidental releases of HDD drilling fluid was required, and MCI was required to post a performance bond to secure the performance of the work in accordance with permit conditions.

No baseline or post-construction environmental monitoring was required under the permit, and no such information was available to the Task Force.

3.5 Evaluation Of The Reliability And Operational Impacts To The State And The Region Of Proposed Crossings Of Long Island Sound And An Evaluation Of The Impact On Reliability By Recommended Limitations On Such Crossings (PA No. 02-95 Section 3(F))

Identifying and addressing electric system reliability issues is the responsibility of ISO-NE in New England, and LIPA and NYISO on Long Island. These authorities assess the current bulk grid security, forecast future demands, and identify current and anticipated problems by applying industry standard reliability criteria. Because of the convergence of gas and electric issues, these authorities have also been studying the adequacy of the gas pipeline infrastructure.[311]

In the Assessment Report Part 1, the Task Force has investigated and is aware of electric reliability problems, including deficiencies and load pockets within SWCT and Long Island. The transmission constraints that affect both SWCT and Long Island threaten reliability and increase costs to consumers.

In the Assessment Report Part 1, and in this report, the Task Force outlined recommendations for the creation of the Connecticut Energy Coordinating Authority (CECA) to oversee the creation of an energy plan for Connecticut that includes a consideration of the needs of the region for the delivery of reliable power and natural gas.

[311] ISO-NE, *Steady-State Analysis of New England's Interstate Pipeline Delivery Capability, 2001-2005* (January 2001); *Steady-State and Transient Analysis of New England's Interstate Pipeline Delivery Capability, 2001-2005* (February 2002), prepared by Levitan & Associates, Inc.
NYSERDA, *The Ability to Meet Future Gas Demands from Electricity Generation in New York*, (July 2002), prepared by Charles River Associates.

The Task Force emphasizes that such a plan must consider the dynamic nature of the marketplace, while protecting the environment of Long Island Sound.

In other sections of this report outlining conclusions complying with the requirements of PA No. 02-95, the Task Force examined existing potential alternatives for avoiding or minimizing construction of energy and telecommunications infrastructure within Long Island Sound. The Task Force also focused on alternatives to constructing power lines or cables within Long Island Sound; and methods that would minimize numbers and impacts of crossings. Again, the Task Force emphasizes the dynamic nature of this compendium.

The Task Force recognizes the convergence of gas deliverability and electric generation capacity. Nearly all electric generation projects that have been constructed or proposed since 1999 are gas-fired.[312] The commercialization of efficient and low-cost gas turbine technologies, the promise of new sources of gas from Atlantic Canada, and the environmental benefits of natural gas, among other factors, have led to the development of substantial new and proposed gas-fired electric generation in New York and New England. This growth in merchant gas-fired generation has led to pipeline expansion projects throughout the region, but has also led to predicted congestion on gas pipelines during the 2005 winter heating season,[313] when the merchant generators compete for pipeline capacity with the LDCs who must meet their core heating loads. These predictions, however, involve substantial assumptions, which must be continually re-examined in response to often unpredictable market dynamics and changes in technology. These factors present a substantial planning challenge in today's partially unregulated environment. As a recent example, the Iroquois' Eastern Long Island Extension natural gas proposal was recently withdrawn because of market reasons.

Reliability issues associated with meeting the region's energy needs are complicated and dynamic. They involve interrelationships among a number of national, regional, state, and local entities. The Task Force recognizes the complexity of a number of interrelated tasks, the completion of which will help ensure the delivery of reliable energy to Connecticut consumers. These include predicting the interrelationship between natural gas supplies and reliable power generation; consideration of regional transmission system interconnections; minimizing vulnerability to terrorism;[314]; and avoiding the potential over dependence on one fuel source. The Task Force also recognizes that modern planning methods using statistical modeling and simulation techniques require substantial investments of resources.[315]

[312] See, for example, ISO-NE's 2003 CELT Report

[313] ISO-NE, *op cit.*

[314] Making the Nation Safer: The Role of Science and Technology in Countering Terrorism. National Academy Press. p.302.

[315] http://www.nyserda.org/press/2001/sept05_01.html and http:// levitan.com/WhatsNewMain.html (In 2001, the NYSERDA and the NYISO awarded Charles River Associates $738,500 for such a comprehensive study).

The Task Force therefore believes that selecting alternatives that ensure reliable power and natural gas delivery must be a goal of a transparent regional energy planning process that uses preferential environmental standards for the protection of Long Island Sound. The Task Force anticipates that this process would include the FERC, ISO-NE, NYISO, state agencies (e.g., CEAB, DPUC, and CECA), and the public.

Electric Cable Crossings

The 1385 Line between Connecticut and New York is operated so that it can instantly respond to a reliability contingency on either side of the interstate interconnection, and as such it allows power to flow to either Connecticut or Long Island to meet peak loads and maintain reliability. This fluid-filled cable system, consisting of seven cables, has been susceptible to numerous breaks over the years, and is proposed to be replaced with three solid dielectric cables with the same power rating.

The flow of electricity on the Cross-Sound Cable is expected, in the near term, to be predominantly from the ISO-NE bulk power grid to Long Island, where additional generation capacity is needed. The Cross-Sound Cable's 330 MW HVDC line would be controllable and could interrupt flows to Long Island during Connecticut peak demand periods, and could be used to import power from Long Island when required.

3.5.2 Natural Gas Pipeline Crossings

One interstate pipeline (Iroquois) presently crosses Long Island Sound between Milford, Connecticut and Northport, Long Island connects to KEDLI's natural gas distribution system.

Long Island has historically had inadequate natural gas transportation capacity and therefore has been heavily dependent on fuel oil for power generation and core residential heating. With the exception of Hawaii, Long Island has the highest percentage of fuel oil consumption anywhere in the U.S. Recent gas transportation studies have indicated that, if the ability to burn oil is substantially diminished, more pipeline capacity will be needed to support the needs of electric generators on Long Island. Similarly, if pipeline capacity is not expanded, the ability to burn oil will remain critical for meeting electricity demands, particularly during the winter heating season.[316] Consequently, Long Island is expected to continue burning substantial amounts of fuel oil for electric generation during winter months. New gas pipeline capacity to Long Island could reduce the amount of fuel oil consumed, which would provide regional air quality benefits that would be enjoyed by Connecticut, and could reduce the risk of oil spills into Long Island Sound as a result of fuel oil deliveries.

[316] NYSERDA, *op cit*, p.5.

Additional pipelines or expansion of existing ones to Long Island could also allow fuel oil use to be reduced, as well as provide backup deliverability in the event of an interruption on any existing pipeline, facilitate gas deliveries to rapidly growing portions of Suffolk County, and provide Long Island with access to a competing source of natural gas from Atlantic Canada, as dictated by market forces.

The integrated use of new, well-planned, and environmentally preferred infrastructure projects to provide market access to clean energy supply will reduce air emissions associated with obsolete and emergency generating facilities, which could possibly reduce costs to consumers. The certification and permit proceedings for facilities proposed to cross Long Island Sound should consider alternatives to ensure that both state and regional reliability needs are met with the least adverse impact on the environment.

3.6 Recommendations for Providing For Regional Energy Needs While Protecting Long Island Sound to the Maximum Extent Possible (PA No. 02-95 Section 3(G))

The Task Force makes the following recommendations, in no particular order, to ensure energy reliability and provide for regional energy needs, while protecting the natural resources of Long Island Sound:

3.6.1 Interstate Coordination and Integrated Resource Management

Expanded Role of CECA

- Expand the role of the CECA to coordinate and facilitate communication with counterparts in New York and Rhode Island that share an interest in interstate energy and infrastructure projects.[317] The CECA and its counterparts in neighboring states may consider mechanisms for coordination, including but not limited to, undertaking a Memorandum of Understanding (MOU) that seeks: consistent and compatible standards to determine public need and environmental preference standards for the protection of Long Island Sound; consideration of benefits and alternative solutions for energy reliability and energy facilities of regional significance; to set goals and encourage the collection of marine and coastal resource data; and to interact with the FERC and other agencies.

[317] A possible counterpart for New York could be the New York Energy Research and Development Authority (NYSERDA), which is currently responsible for developing New York's energy plan, or the Long Island Power Authority (LIPA), which is currently developing an energy plan for Long Island.

Application of Environmental Preference Standards for the Protection of Marine and Coastal Resources

CECA should incorporate environmental preferences when reviewing and evaluating the environmental impacts of a project; the concepts of avoidance, minimization, mitigation, and compensation should be taken in that respective order.

Potential Planning Mechanisms for Long Island Sound

- Connecticut should continue to work toward completing detailed resource data sets and mapping for Long Island Sound. With completion of detailed resource data sets and mapping for Long Island Sound, which is an essential step and requires a significant level of additional financial, personnel and time commitment, the legislature can then evaluate and, as appropriate, implement, or otherwise further the implementation of, specific planning mechanisms for Long Island Sound. Such resource protection based mechanisms may include the designation of marine protected areas, and/or the adoption of marine zoning.

Natural Resource Performance Bond Levels

- Regulatory agencies should continue the practice of requiring performance bonds for projects that may affect Long Island Sound. Performance bonds levels are presently and should continue to be based on a site-specific and project-specific estimation of potential damage, remediation, and monitoring.

3.6.2 Other Legislative and Administrative Changes to the Siting Process

Application Guide for Electric and Fuel Transmission Line Facilities for Marine Projects

- The Siting Council should adopt the revised Application Siting Guide for Electric and Fuel Transmission Line Facilities for Marine Projects, as a guidance document for applicants.

Certification Criteria: Need versus Benefit Standard

- The Connecticut legislature should revise CGS Section 16-50p to replace "benefit" with "need" for the regulation of electric transmission lines that are substantially underwater[318], including in Long Island Sound and adjacent estuaries.

[318] For purposes of this recommendation, underwater is defined as coastal, nearshore, and offshore waters; estuarine embayments; wetlands and watercourses including both tidal and freshwater; intertidal flats; and floodplains.

Project Scoping Process

- Enhance the scoping process during the pre-application consultation period to ensure that the project proponent is fully informed regarding the concerns of the public, the CECA, and individual resource agencies.

Independent Study

- Relevant issues that are not adequately addressed should be studied and analyzed by resource experts, or independent consultants, commissioned by the Siting Council, to further the development of reliable data.
- The Siting Council should develop mechanisms to better communicate to the public the existing process and provisions for the independent study of issues.

Public Availability of Siting Council Documents

- Establish and maintain docket records readily accessible to the public through the Siting Council's web site. At a minimum, the web site should contain a docket management system that allows information to be searched by docket number, date, and keyword. Require the electronic filing of specified materials from the applicant, parties, and intervenors.

3.6.3 Other Legislative and Administrative Changes

Centralized Data Repository for Energy and Environmental Data within Long Island Sound

Designate the Long Island Sound Resource Center at the University of Connecticut, Avery Point and/or the Map and Geographic Information Center (MAGIC) at the Homer Babbidge Library, University of Connecticut, Storrs as the repository for the Task Force's GIS (energy and environment) database, and other Long Island Sound information as developed.

Submerged Lands Leasing Program

- The Connecticut legislature should investigate the viability of and structure for a comprehensive and expanded submerged lands leasing program.

3.7 Recommendations on Natural Resource Performance Bond Levels to Insure and Reimburse the State In The Event That Future Electric Power Line Crossings, Gas Pipeline Crossings or Telecommunications Crossings Substantially Damage the Public Trust in the Natural Resources of Long Island Sound (PA No. 02-95 Section 3(H))

PA No. 02-95, Section 3, (H) directs the Task Force to issue recommendations on natural resource performance bond levels to insure and reimburse the state in the event that future electric power line crossings, gas pipeline crossings or telecommunications crossing substantially damage the public trust in the natural resources of Long Island Sound.

The Task Force recognizes the value of natural resource performance bonds or other financial sureties as mechanisms to ensure that a proposed energy or infrastructure project is constructed as permitted, and that remediation of environmental damage associated with incomplete construction is undertaken without undue delay or cost to the public. The Task Force acknowledges that bonds and other financial sureties, which may be required by the DEP and the Siting Council, are and should continue to be calculated based upon site-specific and project-specific estimation of potential environmental impacts. Uniform bond levels may not ensure that performance bonds are appropriate, based on the requisite relationship between the amount of the performance bond and the activity being bonded, to adequately protect the resources of Long Island Sound.

The Task Force also recognizes that there could be certain instances of damage to the public trust where performance bonds may not provide funding in a timely or appropriate manner to adequately address such damage. Consequently, the Task Force concluded that there may be a benefit to affording state agencies access to enhanced funding to address other impacts not attributable to a specific project. The Task Force identified an expanded submerged lands leasing program as a possible means to enhance such funding.

Regulatory agencies should continue the practice of requiring performance bonds for projects that may affect Long Island Sound. Performance bonds levels should be based on a site-specific and project-specific estimation of potential damage, remediation, and monitoring.

The Connecticut legislature should investigate the viability of and structure for a comprehensive and expanded submerged lands leasing program.

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